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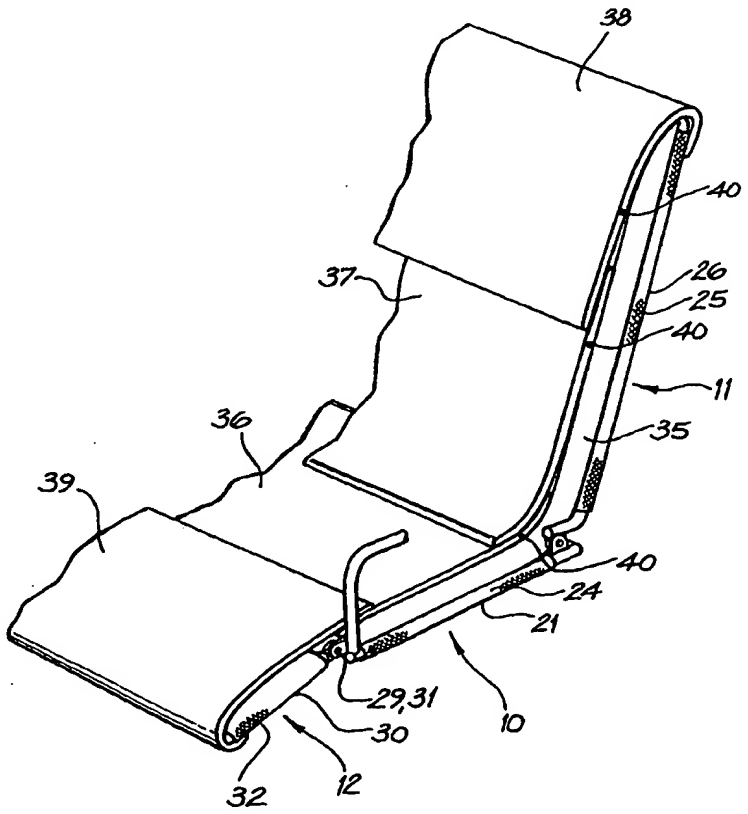
(54) Title: CHAIR INCORPORATING AIR CUSHIONS

(57) Abstract

A chair that is suitable for supporting invalids and aged persons who are obliged to remain seated for protracted periods of time. The chair has a pivotable seat support structure (10), a pivotable back support structure (11) and a pivotable leg rest (12). An air–containing cushion (36) is secured to the seat support structure and two overlapping air–containing cushions (37 and 38) are secured to the backrest support structure. Also, compressible material sheets are employed to underlay and overlay the air–containing cushions, and an upholstery material is employed to cover the overlay. The chair is characterised in that each of the cushions comprises a bladder which is formed from a pliable, gas impermeable material and in that each bladder is charged with air in an amount not greater than 60 % of the maximum contained volume of the bladder whereby the air may freely be displaced within the bladder and, as a consequence, shaping may be imparted to the cushion to complement that of a person who occupies the chair.



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CHAIR INCORPORATING AIR CUSHIONS

FIELD OF THE INVENTION

This invention relates to a chair construction that incorporates air-containing cushions. The invention has been developed in the context of so-called nursing chairs and is hereinafter described in this context. However, it will be understood that the invention does have broader application, for example to lounge chairs and office chairs. It should also be understood that the term "chairs" as used in this specification is to be construed as including lounges, settees and such other seating items as have seat and backrest portions.

BACKGROUND OF THE INVENTION

Numerous attempts have been made to create chairs that provide appropriate support and comfort for invalids and aged persons who are confined to the chairs for protracted periods. Those persons must be supported in such a way that their body mass is distributed more-or-less evenly over the area of supporting cushions, so as to avoid traumatic pressure points. This means that supporting cushions must function to conform with the shape of seated persons and, whilst this might be made possible if chairs were to be tailored to the requirements of individual persons, this clearly is not practicable. The simple fact is that any given chair might be used by a number of different persons having different physical sizes, shapes and body masses.

Attempts have been made to accommodate the special needs of aged and invalid persons by the development of water chairs. These have taken various forms and the most successful of them has been constructed with a number of separate bladder-like bags, each of which is partially filled with water. The bags are fitted together and located below upholstery material, and the water within each bag is displaceable to accommodate body shapes of persons who are supported by the chairs.

The water chairs have proved to be very successful in nursing homes and other places where aged persons and long term invalids are accommodated. However, the chairs have two problems; they have a potential to leak water with damage to and aging of the water-containing bags and, perhaps more importantly, they are extremely heavy due to the weight of water (typically 20 to 30 kilograms) that is required to provide full support for a range of differently sized people. The latter problem requires that the chairs be mounted on large size wheels, not just casters or glides, and even then the chairs are found by nursing personnel to be difficult to manoeuvre.

The chair which is the subject of the present invention has been developed in an attempt to achieve a substantial weight reduction whilst retaining the recognised benefits of water chairs. This has led the inventor to consider air as an alternative to water.

So-called blow-up air beds have long been used for recreational purposes, and inflatable cushions and neck supports, both in a variety of shapes, are used regularly by travellers in aircraft and road vehicles to provide seat cushioning and neck support. However, all of these known inflatable beds and cushions normally are used in a fully inflated or near-fully inflated state. That is they normally are filled with air to a level at which they are elastically stressed or to an extent approaching that level, and they rely upon the compressible nature of air to provide comfortable (or as comfortable as possible) body support.

Chairs which have air-inflated cushions also have been developed or, at least, disclosed, for example in patent specifications numbered AU-B-14164/83, AU-A-10206/95 and WO96/02402. However, these publications disclose chair cushions that are inherently complex, in some cases employing multi-compartmented structures, and the cushions are filled with air to a level at which elastic stress

occurs.

SUMMARY OF THE INVENTION

The present invention seeks to provide an air cushioning arrangement that is appropriate to chairs, which avoids the complexities of prior art approaches and which provides for shape adaptation as a consequence of air displacement within containing cushions.

The invention may be defined broadly as providing a chair having a seat portion and a backrest portion. The chair comprises seat and backrest support structures, at least one air-containing cushion positioned on the seat support structure, at least one air-containing cushion secured to the backrest support structure, a layer of compressible material overlying the cushions, and an upholstery material covering the layer of compressible material. Each cushion comprises a bladder which is formed from a pliable, gas impermeable material and each bladder is charged with air in an amount not greater than 60% of the maximum contained volume of the bladder, whereby the air may freely be displaced within the bladder and, as a consequence, shaping may be imparted to the cushion to complement that of a person who occupies the chair.

In the context of this specification the expression "maximum contained volume" is to be understood as meaning the maximum volume to which the bladder may be inflated without experiencing elastic stress.

PREFERRED FEATURES OF THE INVENTION

Each bladder preferably is charged with air in an amount not greater than 50% of the maximum contained volume of the bladder and, most preferably, to an amount within the range 15% to 30% of the maximum contained volume of the bladder. In some cases, depending upon the intended use of the chair, respective ones of the bladders may be charged with air to different levels. The extent to which each bladder is required to be charged with air may initially be determined empirically for different chair structures or

uses.

When charged with air, each bladder is closed against inflow or outflow of air. The bladder may be sealed closed in a permanent manner, although it is preferred that the bladder be provided with a valve through which air may be admitted as and when required.

The compressible material that is used to overlay the cushions may comprise a matted filamentary material or an expanded foam plastics sheet material. The main function of the compressible material is to create a smooth or uniform contour over which to lay the upholstery material. However, it is important that the compressible material and the upholstery material be fitted to the chair in such a way that they and the cushions may move together to assume a shape that complements that of a support person. That is, it is essential that air contained within each of the bladders should be free to move into free space within the bladders and that the covering materials should not act to constrain re-shaping of the cushion during air movement.

The seat portion of the chair will normally support a single cushion but the backrest portion may be fitted with one or more cushions, depending upon the size of the chair and its intended function. The chair cushions may be butted together but they preferably are arranged so that they overlap one another. That is, when the backrest portion is fitted with two cushions, the upper cushion will overlap the lower cushion. Then, the lower cushion will be arranged to overlap the seat cushion. The cushion (or the higher cushion) that is fitted to the backrest portion preferably is arranged to extend over and around the upper edge of the backrest portion of the chair, so as to provide air support for the neck region of a person seated on the chair.

Expanded foam sheet material may be located below one or more of the cushions for the purpose of providing additional load support to a seated person or for providing

support in the unlikely event of air being displaced from one or more of the bladders. Also, when the expanded foam sheet material is located both below and above the cushions, that which is located below the cushions preferably is more dense than that which is located above the cushions.

The upholstery material may comprise leather, fabric or a plastics sheet material, depending upon the intended use of the chair. It is preferred in respect of nursing chairs that are intended for use with persons who may be incontinent that the upholstery material be composed of a semi-permeable or vapour permeable plastics sheet material.

When in the form of a nursing chair the backrest support structure preferably is pivotably mounted with respect to the seat support structure. Also, the seat support structure preferably is mounted to or integrated with a support base which, in turn, preferably is carried by wheels or rollers.

Furthermore, when the chair is in the form of a nursing chair, it preferably comprises a leg support portion that is pivotably mounted with respect to the seat portion and, in such case, an air-containing bladder-form cushion will be mounted to the leg rest portion.

The chair may be fabricated by using timber framing, but the chair preferably is formed with a metal frame which is fitted with reinforced plastics sheet material to form the seat and backrest support structures and to carry the cushions.

The cushions may be removably secured to the seat and backrest support structures by way of self-securing fastening material such as that which is sold under the Velcro trade mark. Also, the upholstery material may itself be secured in place by use of similar self-securing fastening material.

The invention will be more fully understood from the following description of a relatively simple example of a

metal-framed nursing chair that has been developed to incorporate the invention. The description is provided with reference to the accompanying (largely diagrammatic) line drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Figure 1 shows an exploded perspective view of the metal frame of the nursing chair with all cushions and upholstering material removed from the chair.

Figure 2 shows a perspective view of one corner of the chair as seen in the direction of arrow A in Figure 1, the view showing a portion of padding material and seat support material.

Figure 3 shows, in perspective, a partial view of the chair when fitted with air-containing cushions and an underlay.

Figure 4 shows a side view of the chair when fitted with air-containing cushions, an underlay, an overlay and upholstering material.

Figure 5 shows a view similar to Figure 4 but when the chair is accommodating a seated person.

DETAILED DESCRIPTION OF PREFERRED FORM OF THE INVENTION

As illustrated, in particular in Figures 3 to 5, the chair includes a seat portion 10, a backrest portion 11 and a leg support portion 12. The complete chair is built upon an integral tubular metal frame 13 which is shown in Figure 1.

The frame has a support base 14 which is mounted to floor engaging wheels 15. Two brackets 16 are welded to tubular side rails 17 of the support base and provide bearings 18 for a seat support frame structure 19. The seat support frame structure 19 is pivotably mounted to the support base and telescopic gas struts (not shown) interconnect the support base and the seat support frame structure 19 to provide for controlled tilting of the whole seat portion 10 relative to the support base 14.

The seat support frame structure 19 has upper and lower side rails 20 and 21, and cross rails 22. The upper side rails form the structural parts of armrests of the chair and, for this purpose, the side rails carry expanded foam plastics padding material 23 which is shown in part in Figure 2. As will be later described, similar foam plastics sheet material is secured to other parts of the structure and is overlaid with upholstering material in the finished chair.

A fibre reinforced plastics sheet material 24 is provided to extend between the lower side rails 21 of the seat support frame structure for carrying seat cushioning material (referred to in more detail later). A similar fibre reinforced plastics sheet material 25 (a portion of which is shown in Figure 1) is provided on a backrest frame portion 26 for supporting backrest cushioning.

The seat support frame structure 19 is provided with pivot bearings 27 to match the bearings 18 on the support base 14. Similar pivot bearings 28 and 29 are provided on the seat support frame structure 19 for pivotably mounting the backrest frame portion 26 and a leg support frame portion 30.

The leg support frame portion 30 comprises a generally rectangular frame that, like the rest of the structure, is formed from tubular metal, and it is pivotably mounted to the seat support frame structure 19 by way of pivot bearings 31. The leg support frame portion is fitted with expanded foam type plastics material sheet 32 for carrying leg support cushioning.

The backrest frame portion 26 is formed from tubular metal predominantly as a rectangular frame but it includes a lower angled portion which carries pivot bearings 33. It also includes triangular-shape side portions 34 which are formed from tubular metal and which are fitted with expanded foam padding material (not shown) to form side wings of the chair when finally upholstered.

The backrest frame portion 26 of the chair is connected to the seat support frame portion 19 by telescopic gas struts (not shown), so as to permit pivotal movement of the backrest of the chair relative to the seat portion of the chair.

With the chair structure as described thus far, each of the seat portion, backrest portion and leg support portion may be pivoted one relative to the other so that the chair may be placed in any disposition ranging from a bed through to an upright chair. Also, the entire structure may be pivoted about the support base 14 to facilitate entry and exit of invalid persons from the chair.

As shown in Figures 3 and 4, a single underlay 35 that is formed from expanded foam sheet material, is laid on and secured to the supporting sheet materials 24 and 25. A single air cushion 36 is carried by the portion of the underlay 35 that is positioned on the supporting material 24. Also, two air cushions 37 and 38 are secured to the backrest sheet material 25, and a single air cushion 39 is secured to the expanded foam sheet material 32 that is carried by the leg support frame portion 30 of the chair.

Each of the air cushions 36 to 38 is formed from a bladder having side walls as well as front and back walls, such that the cushion would assume a generally oblong shape if charged with air in an amount equal to the maximum contained volume of the bladder. The bladders are fabricated from pliant air impermeable plastics sheet material having a thickness within the range 0.25 to 1.00 millimetre, and all seams of the bladders are closed by welding or gluing to effect complete sealing. Valves 40 are provided in one side wall of each of the bladders 36 to 38 to enable air to be delivered to and bled from the cushion which is constituted by the bladder.

The cushion 39 is also formed from a bladder but in this case the bladder has a flatter, less oblong shape (if

it were to be charged to its maximum contained volume) than the other bladders 36 to 38. Also, an air admitting valve is located in one edge seam of the bladder that, when charged with air, constitutes the cushion 39.

As indicated previously, it is important that the bladders be charged with air in an amount not greater than 50% to 60% of the maximum contained volume of the bladders and, more usually, in an amount within the range 15% to 30% of the maximum contained volume of the bladders. The actual amount of air will be determined in any given case by the position of the cushion, the amount of foam plastics sheet material cushioning that is used in conjunction with the cushions and the resiliency of the upholstering material which is used to overlay the cushions.

The cushions 36 to 39 are fitted closely together, in overlapping relationship, as indicated in Figure 4, in order that they might be caused to meld together when adapting to the shape of a seated person, as indicated in Figure 5. The upper backrest cushion 38 is extended over (ie, wrapped around) the top of the backrest frame portion 26 to provide air cushioned support for the neck and head of a seated person. Similarly, the leg support cushion 39 is wrapped around the front and rear sides of the leg support frame portion 30.

The cushions 36 to 39 are removably secured to the underlays 32 and 35 by a self-securing fastening material such as that which is sold under the Velcro trade mark.

As shown in Figure 4, an overlay 41 in the form of a continuous length of relatively soft, compressible material is laid along the full length and height of the chair, to cover the leg support portion, the seat portion and the backrest portion of the chair. The overlay 41 is formed from an expanded foam plastics sheet material that is less dense than the material from which the underlay 35 is formed.

Upholstering material 42 is used to cover the entire chair and, for convenience, this material may also be held in place by self-securing fastening material.

Variations and modifications may be made in respect of the invention as above described and defined in the following claims.

THE CLAIMS

1. A chair of a type having a seat portion and a backrest portion, the chair comprising a seat support structure, a backrest support structure, at least one air-containing cushion positioned on the seat support structure, at least one air-containing cushion secured to the backrest support structure, a layer of compressible material overlaying the cushions, and an upholstery material covering the layer of compressible material; each cushion comprising a bladder which is formed from a pliable, gas impermeable material and each bladder being charged with air in an amount not greater than 60% of the maximum contained volume of the bladder whereby the air may freely be displaced within the bladder and, as a consequence, shaping may be imparted to the cushion to complement that of a person who occupies the chair.

2. The chair as claimed in claim 1 wherein each bladder is charged with air in an amount not greater than 50% of the maximum contained volume of the bladder.

3. The chair as claimed in claim 1 wherein each bladder is charged with air in an amount between 15% and 30% of the maximum contained volume of the bladder.

4. The chair as claimed in claim 1 wherein respective ones of the bladders are charged with air to different levels falling within the range 15% to 60% of the maximum contained volume of the respective bladders.

5. The chair as claimed in any one of claims 1 to 4 wherein each bladder is provided with a valve through which air is admitted to the bladder.

6. The chair as claimed in any one of claims 1 to 5 wherein each bladder has a front wall, a back wall and peripheral side walls whereby the bladder would assume a generally oblong shape if it were charged with air in an amount equal to the maximum contained volume of the bladder.

7. The chair as claimed in any one of claims 1 to 6 wherein the compressible material that overlays the cushions comprises an expanded foam plastics material sheet.

8. The chair as claimed in any one of the preceding claims wherein two of the air-containing cushions are secured to the backrest support structure, one above the other.

9. The chair as claimed in claim 8 wherein an upper one of the backrest support structure cushions overlaps the lower one of the backrest support cushions, and wherein the lower one of the backrest support cushions overlaps the cushion that is positioned on the seat support structure.

10. The chair as claimed in claim 8 or claim 9 wherein the upper one of the backrest support cushions extends over and around an upper edge of the backrest portion of the chair.

11. The chair as claimed in any one of the preceding claims wherein an underlay which is formed from an expanded foam sheet material is located below the air-containing cushions.

12. The chair as claimed in claim 11 wherein the underlay is formed from a material that has a higher density than that of the compressible material that overlays the cushions.

13. The chair as claimed in any one of the preceding claims wherein the upholstery material is composed of a semi-permeable or vapour-permeable plastics sheet material.

14. The chair as claimed in any one of the preceding claims wherein the backrest support structure is pivotably mounted with respect to the seat support structure.

15. The chair as claimed in any one of the preceding claims wherein the seat support structure is mounted to a support base which is carried by wheels.

16. The chair as claimed in claim 15 wherein the seat support structure is pivotably mounted with respect to the support base.

17. The chair as claimed in any one of the preceding claims wherein a leg support portion is pivotably mounted with respect to the seat portion and wherein an air-containing cushion is mounted to the leg support portion and is overlayed by both the compressible material and the upholstery material.

18. The chair as claimed in any one of the preceding claims wherein the seat support structure and the backrest support structure are formed as metal frames and wherein the metal frames carry reinforced plastics sheet material which support, either directly or indirectly, the air-containing cushions.

19. The chair as claimed in any one of the preceding claims wherein the cushions are removably secured to the seat and backrest support structures by way of self-securing fastening materials.

20. The chair as claimed in any one of the preceding claims wherein the upholstery material is secured in place by the use of self-securing fastening materials.

21. The chair substantially as shown in the accompanying drawings and substantially as hereinbefore described with reference thereto.

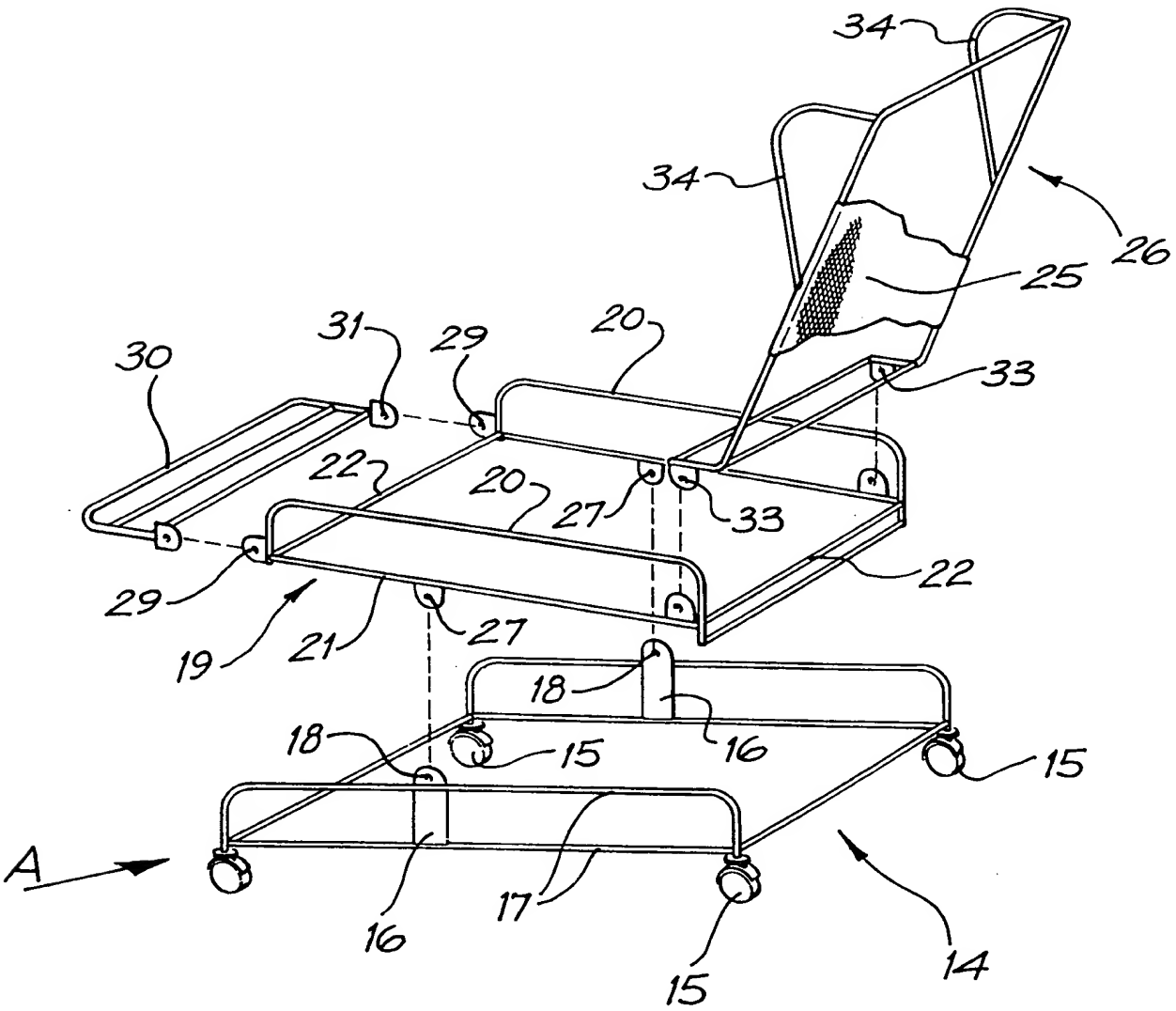
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FIG. 1

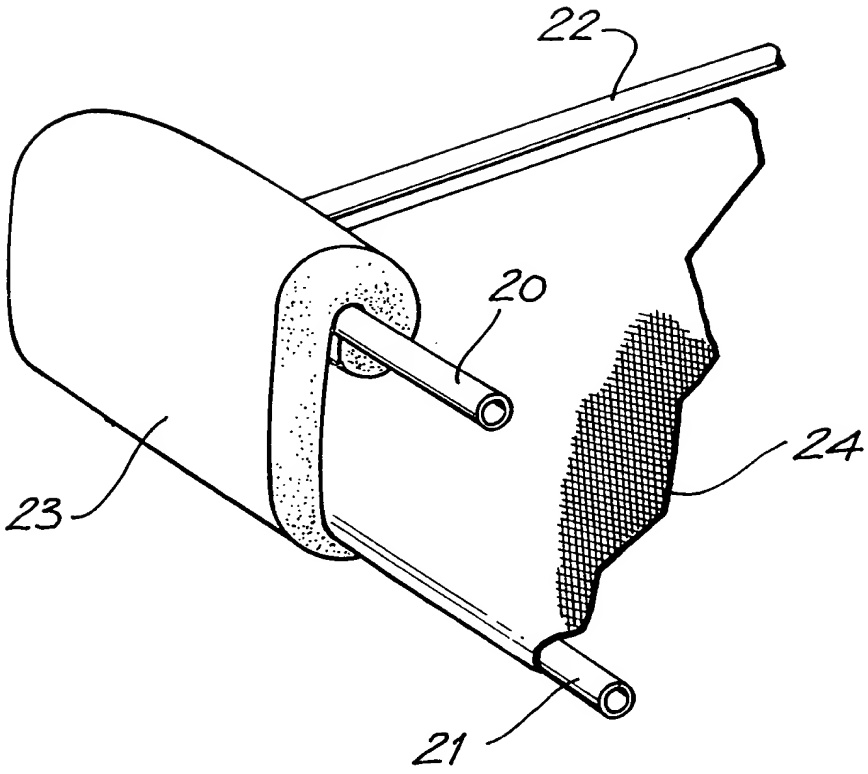

FIG. 2

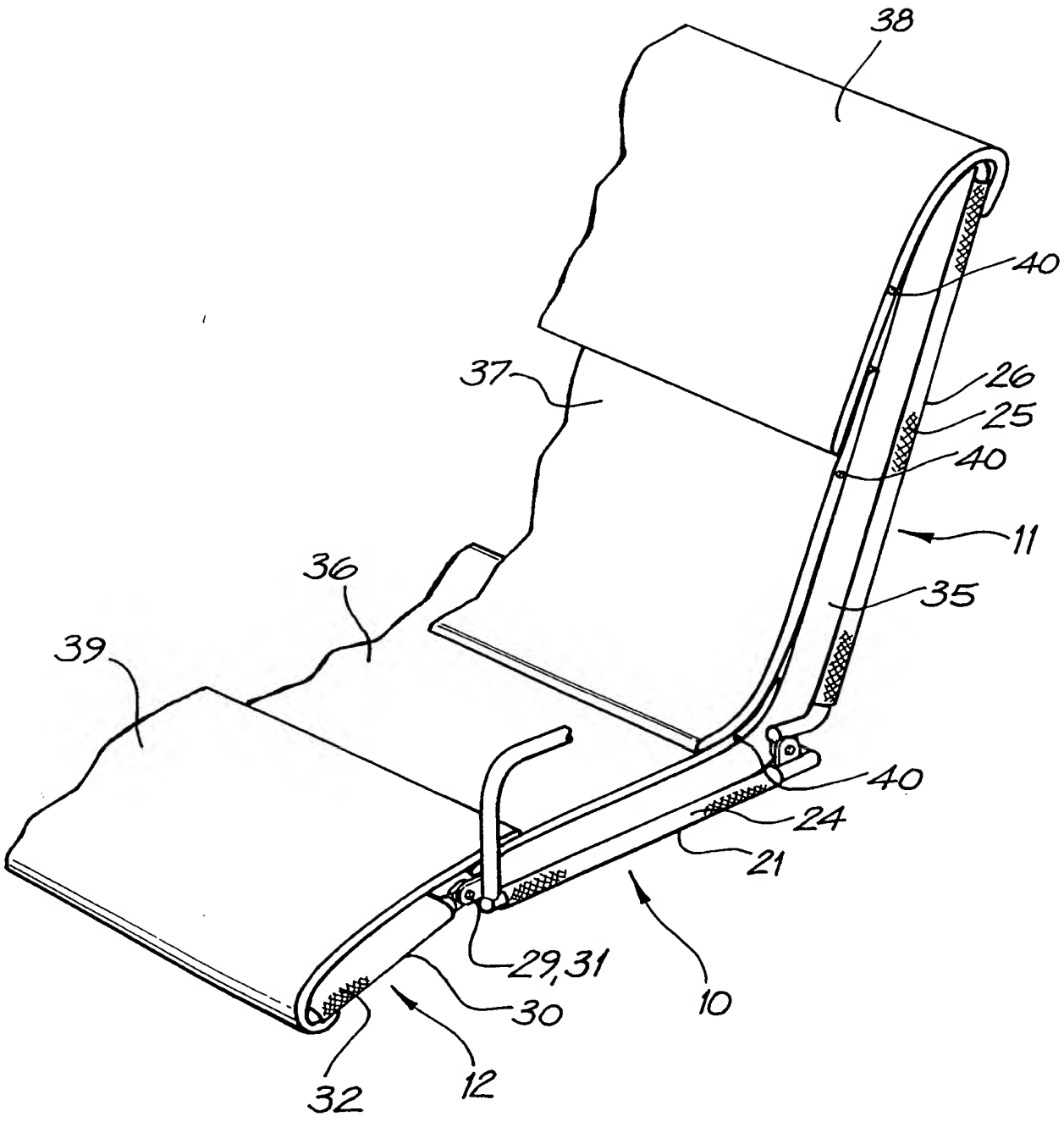

FIG. 3

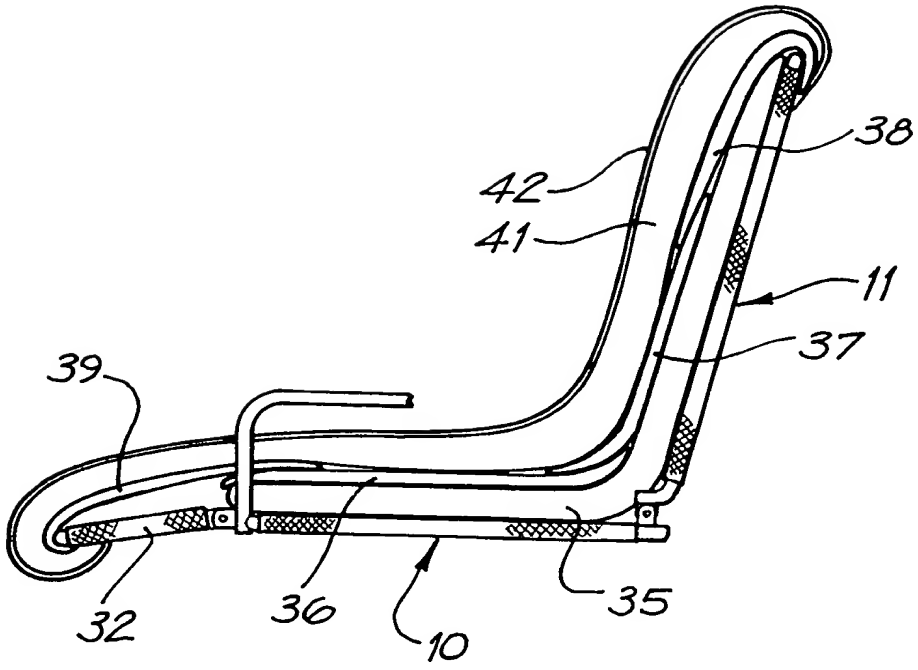

FIG. 4

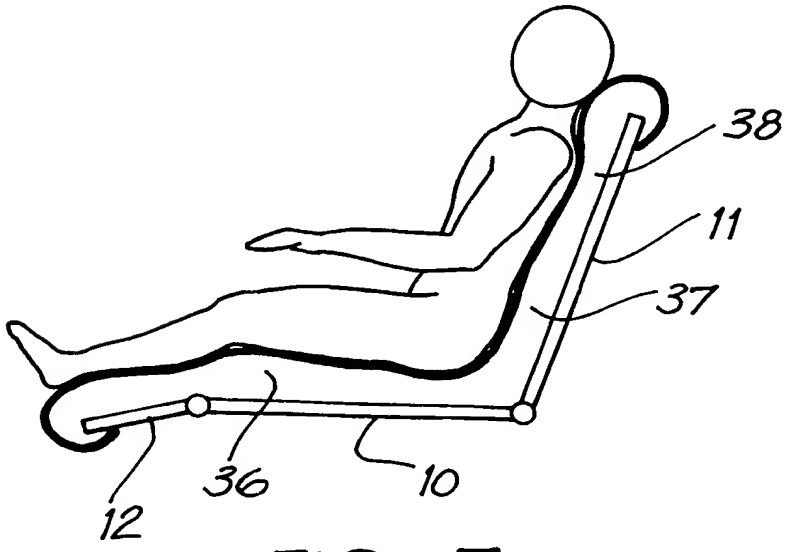

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00094

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: A61G 5/10, A47C 27/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C 27/08, 27/10, 7/-, A616 5/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 284294 A (SMITH), 28 September 1988 Entire document	1-21
X	DE 2625277 A (MARX). 15 December 1977 Entire document	1-21
X	AU 10206/95 A (THYSSE), 3 August 1995 Entire document	1-21

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

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Date of the actual completion of the international search	Date of mailing of the international search report
16 April 1999	-4 MAY 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer **CRAIG GLEGHORN** Telephone No.: (02) 6283 2064

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00094

C (Continuation). **DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2536975 A (REGIE NAT USINES RENAULT) 8 June 1984 Entire document	1-21
X	EP 382663 A (DE SAINT RAPT) 16 August 1990 Entire document	1-21

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU 99/00094

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	284294	AU	83017/87	JP	63255014	NZ	223779
		US	4838613				
FR	2536975	EP	113613				
EP	382663	FR	2642628				

END OF ANNEX

ATENT COOPERATION TR TY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

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Date of mailing (day/month/year) 10 September 1999 (10.09.99)	
International application No. PCT/AU99/00094	**Applicant's or agent's file reference** FP10696
International filing date (day/month/year) 18 February 1999 (18.02.99)	**Priority date** (day/month/year) 18 February 1998 (18.02.98)
Applicant SMITH, Peter, Alan	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

26 August 1999 (26.08.99)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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Form PCT/IB/331 (July 1992)

2839394

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RW:RS:FP10696	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU 99/00094	International filing date *(day/month/year)* 18 February 1999	Priority Date *(day/month/year)* 18 February 1998
International Patent Classification (IPC) or national classification and IPC Int. Cl.[6] A47C 4/54, 27/10, A61G 5/10		
Applicant SMITH, Peter Alan		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

I	☒	Basis of the report
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain documents cited
VII	☒	Certain defects in the international application
VIII	☐	Certain observations on the international application

Date of submission of the demand 26 August 1999	Date of completion of the report 13 January 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **CRAIG GLEGHORN** Telephone No. (02) 6283 2064

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU 99/00094

I. Basis of the report

1. With regard to the elements of the international application:*

- [X] the international application as originally filed.
- [ ] the description, pages , as originally filed,
  pages , filed with the demand,
  pages , filed with the letter of .
- [ ] the claims, pages , as originally filed,
  pages , as amended (together with any statement) under Article 19,
  pages , filed with the demand,
  pages , filed with the letter of .
- [ ] the drawings, pages , as originally filed,
  pages , filed with the demand,
  pages , filed with the letter of .
- [ ] the sequence listing part of the description:
  pages , as originally filed
  pages , filed with the demand
  pages , filed with the letter of .

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

- [ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- [ ] the language of publication of the international application (under Rule 48.3(b)).
- [ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:

- [ ] contained in the international application in written form.
- [ ] filed together with the international application in computer readable form.
- [ ] furnished subsequently to this Authority in written form.
- [ ] furnished subsequently to this Authority in computer readable form.
- [ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- [ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:
   - [ ] the description, pages
   - [ ] the claims, Nos.
   - [ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

INTERNATIONAL PRELI[redacted]ARY EXAMINATION REPORT [redacted]ternational application No. PCT/AU 99/00094

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 21	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 21	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 21	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

No individual citation or obvious combination citations discloses a chair with the features defined by claim 1. The closest prior art is EP 284294.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU 99/00094

VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 21 relies on a reference to the description and drawings and consequently fails to meet the requirements of Rule 6.2(a).

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00094

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: A61G 5/10, A47C 27/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C 27/08, 27/10, 7/-, A616 5/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 284294 A (SMITH), 28 September 1988 Entire document	1-21
X	DE 2625277 A (MARX), 15 December 1977 Entire document	1-21
X	AU 10206/95 A (THYSSE), 3 August 1995 Entire document	1-21

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 April 1999	-4 MAY 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer CRAIG GLEGHORN Telephone No.: (02) 6283 2064

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU 99/00094

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	284294	AU	83017/87	JP	63255014	NZ	223779
		US	4838613				
FR	2536975	EP	113613				
EP	382663	FR	2642628				

END OF ANNEX

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00094

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: A61G 5/10, A47C 27/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C 27/08, 27/10, 7/-, A616 5/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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[X] See patent family annex

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 April 1999	-4 MAY 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer CRAIG GLEGHORN Telephone No.: (02) 6283 2064

Form PCT/ISA/210 (second sheet) (July 1998) COPS.1A

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00094

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2536975 A (REGIE NAT USINES RENAULT) 8 June 1984 Entire document	1-21
X	EP 382663 A (DE SAINT RAPT) 16 August 1990 Entire document	1-21

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU 99/00094

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Patent Document Cited in Search Report		Patent Family Member					
EP	284294	AU	83017/87	JP	63255014	NZ	223779
		US	4838613				
FR	2536975	EP	113613				
EP	382663	FR	2642628				

END OF ANNEX